



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/682,052	10/09/2003	Kuo Reay Peng	TS01-037B	8179
7590	04/28/2006		EXAMINER	
George O. Saile 28 Davis Avenue Poughkeepsie, NY 12603				JACKSON JR, JEROME
			ART UNIT	PAPER NUMBER
			2815	

DATE MAILED: 04/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/682,052	PENG ET AL.
	Examiner Jerome Jackson Jr.	Art Unit 2815

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 29-48 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 29-48 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 09 October 2003 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date: _____
3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>12/22/03</u> .	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 29,30,32-40,42-48 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Ohnakado '504.

Ohnakado shows an ESD circuit comprising in figure 29(a) a substrate 81, heavily doped portions 85a and 86a, and a plurality as shown in figures 10 or 36 of similar diodes. See also paragraphs [0070]-[0076]. Accordingly claim 29 is anticipated or at least obvious depending on one's interpretation of "heavily". Claim 30 is rejected as insulation layer 82 may be termed a "shallow trench isolation" or at least such isolation is obvious isolation structure for integrated circuitry as Ohnakado. See also insulation layer 2 of '504. Claim 32 is rejected as there is insulation material above the p-n junction in figure 29(a). Moreover, such passivation is necessary to prevent

contamination from water or other environmental species in a real working device.

Oxide passivation is obvious. Claim 33 is rejected as anode and cathode regions are inherent in diodes. Claims 34-37 are rejected as “approximately” does not structurally distinguish over Ohnakado, and furthermore, the same dimensions or magnitudes are either anticipated or obvious as the diodes of Ohnakado are used in the same manner for the same purpose- ESD protection. Claim 38 is rejected as the diodes of ‘504 function in the same manner. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. Claims 39,40,42-48 are rejected as above.

Claims 29-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnakado in view of Jang ‘740.

Ohnakado does not specifically teach an insulating layer under shallow trench isolation. This difference is not patentable as Jang shows shallow trench isolation and further shows an insulating layer between the STI and substrate. For the same structural advantages as in Jang it would have been obvious to have practiced a further insulation layer and STI in an ESD device as Ohnakado in order to better isolate, reduce surface roughness, and produce better quality STI. Claims 31 and 41 are obvious structure.

Claims 29,30,32-40,42-48 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Chang ‘052.

Chang teaches polysilicon diodes (p/n/p/n) for ESD protection over an insulation layer and STI. The functional language and "approximate" magnitudes of size and dopant concentrations do not structurally distinguish the claims over Chang who functions in the same manner. The four layer structure of Chang's polysilicon "diode" device anticipates or at least makes the claim structure depending on one's interpretation of "heavily doped", "serially connected", and "diode" structure.

Claims 29-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohnakado with Jang and further in view of Doyle '427.

In regard to applicant's claims reciting dopant densities and thicknesses, Doyle shows that one of ordinary skill adjusts such variables to arrive at desired zener diode properties, and the claimed magnitudes would have been obvious for diodes in Ohnakado as Doyle shows similar dopant densities and layer thicknesses and one of ordinary skill routinely would adjust the dopant density and layer thickness to optimize results. There are no unexpected results from applicant's recitations and merely adjusting these parameters to meet an ordinary breakdown voltage or to optimize parameters cannot be considered "unexpected results". See MPEP 2144.05.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerome Jackson Jr. whose telephone number is 571-272-1730. The examiner can normally be reached on M-Th.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Parker can be reached on 571-272-2298. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jj



JEROME JACKSON  
PRIMARY EXAMINER